

What is claimed is:

1. A digital camera comprising:

an imaging device including a two-dimensional array of pixels for receiving an
5 optical image of a subject to generate an image signal;

a driver for driving a taking lens in steps each producing movement of said
taking lens through a distance greater than a depth of field;

a calculator for calculating an evaluation value based on the image signal
obtained from said imaging device in each position to which said taking lens is driven;

10 a processor for performing an interpolation process upon a plurality of
evaluation values obtained in respective positions to which said taking lens is driven to
determine an in-focus position of said taking lens; and

a controller for controlling said driver to drive said taking lens to said in-focus
position, based on a processing result from said processor.

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2. The digital camera according to claim 1,

wherein said driver drives said taking lens in steps each producing movement of
said taking lens through a smaller distance than said distance near said in-focus position.

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3. The digital camera according to claim 1,

wherein said interpolation process is performed based on evaluation values
prior to and after a maximum evaluation value.

4. The digital camera according to claim 3,

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wherein said interpolation process determines said in-focus position by a steep

inclination extension method.

5. The digital camera according to claim 1,
wherein said evaluation value includes contrast of said image signal.

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6. A digital camera comprising:

an imaging device including a two-dimensional array of pixels for receiving an
optical image of a subject to generate an image signal;

a first driver for driving a taking lens;

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a second driver for driving a diaphragm having a variable aperture diameter;

and

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a controller for controlling said first driver to drive said taking lens, with said
diaphragm adjusted to a first aperture diameter smaller than a second aperture diameter by
controlling said second driver, to calculate an evaluation value based on a captured image
obtained from said imaging device in each position to which said taking lens is driven,
thereby determining a direction in which said taking lens is to be driven.

7. The digital camera according to claim 6, further comprising

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a calculator for performing an exposure computation to calculate a proper
aperture value for proper exposure of said imaging device,

wherein said second aperture diameter is determined by said proper aperture
value.

8. The digital camera according to claim 6, further comprising

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an adjuster for adjusting a gain of said image signal obtained by said imaging

device, said adjuster increasing said gain in accordance with a change in aperture diameter of said diaphragm which is made by said controller.

9. The digital camera according to claim 6, further comprising
5 an adjuster for adjusting charge storage time in said imaging device, said adjuster increasing said charge storage time in accordance with a change in aperture diameter of said diaphragm which is made by said controller.

10. The digital camera according to claim 6,
10 wherein said controller controls said second driver to increase the aperture diameter of said diaphragm when said taking lens is driven to near an in-focus position.

11. The digital camera according to claim 10, further comprising
a calculator for performing an exposure computation to calculate a proper
15 aperture value for proper exposure of said imaging device,
wherein said controller controls said second driver to adjust said diaphragm to a third aperture diameter greater than the aperture diameter determined by said proper aperture value when said taking lens is driven to near said in-focus position.

20 12. The digital camera according to claim 10, further comprising
an adjuster for adjusting a gain of said image signal obtained by said imaging device, said adjuster decreasing said gain as said controller increases the aperture diameter of said diaphragm.

25 13. The digital camera according to claim 6,

wherein said controller controls said second driver to adjust said diaphragm to said first aperture diameter when the direction in which said taking lens is to be driven is not determinable.

5 14. The digital camera according to claim 6,
wherein said controller operates when receiving an instruction to capture an image.

10 15. The digital camera according to claim 6,
wherein said controller operates when power to said digital camera is turned on.

16. The digital camera according to claim 6,
wherein said controller operates after said captured image is recorded.

15 17. The digital camera according to claim 6,
wherein said controller operates when a recording mode is selected.

18. The digital camera according to claim 6,
wherein said evaluation value includes contrast of said image signal.

20 19. A method of controlling autofocus, comprising the steps of:
receiving an optical image of a subject at an imaging device including a two-dimensional array of pixels to generate an image signal;
driving a taking lens in steps each producing movement of said taking lens
25 through a distance greater than a depth of field;

calculating an evaluation value based on the image signal obtained from said imaging device in each position to which said taking lens is driven;

performing an interpolation process upon a plurality of evaluation values obtained in respective positions to which said taking lens is driven to determine an in-

5 focus position of said taking lens; and

driving said taking lens to said determined in-focus position.

20. A method of controlling autofocus, comprising the steps of:

receiving an optical image of a subject at an imaging device including a two-
10 dimensional array of pixels to generate an image signal;

calculating a change in evaluation value based on the image signal obtained from said imaging device before and after said taking lens is driven;

adjusting a diaphragm to a first aperture diameter smaller than a second
aperture diameter when said change in evaluation value is less than a predetermined
15 value; and

calculating an evaluation value based on a captured image obtained from said imaging device, with said diaphragm adjusted to said first aperture diameter, to determine a direction in which said taking lens is to be driven.